Passage records of Amur Falcon *Falco amurensis* from SE Asia to southern Africa including first records from Ethiopia

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The Amur Falcon *Falco amurensis* is a long distance migrant from its breeding area north of the Himalayas to the wintering grounds in southern Africa (principally southern Zambia and southern Malawi south to the Transvaal, northern Cape Province and Natal and northeast Botswana) (Fig.1). Whilst the breeding and wintering areas are well-known, the passage movements are poorly documented or understood and, as Brown *et al.* (1982) commented, the routes are 'still a mystery' and 'certainly the most remarkable of any raptor known.' Although the supporting data are speculative Moreau (1972), Ali & Ripley (1968) and Brown *et al.* (1982) considered that most of the population crosses the western Indian Ocean in a single movement from western India to somewhere along the coast of East Africa. This paper examines the data in support of the transoceanic crossing, together with the records of birds seen moving overland, and presents recent new records from Ethiopia.

Autumn departure from the breeding areas

The breeding range of the Amur Falcon is from southern Siberia, east from the Yablonovy range along the Argun and Onon Rivers and north along the Amur to the confluence with the Gorin River, through northern and eastern Mongolia and south through Manchuria to northern Korea and Inner Mongolia, then south through eastern China to Honan and northern Anhwei (Fig. 1). La Touche (1925-34) and Cheng (1987) reported it as fairly common in the breeding range but rare elsewhere; this is supported by the sparsity of records of migrants anywhere in central China and its occurrence only as a vagrant (less than ten records per year in the southeastern provinces) in southern China and no accepted records at all in Hong Kong (Lewthwaite pers. comm.). In Siberia and northeastern China departure time from the breeding areas is during September 'when it collects in large numbers before going south' (Swinhoe 1871). Passage birds in NE China, at Beidaihe, on the Gulf of Bohai (and within the breeding area), between 1942 - 1944 and 1986 - 1990 were considered very common in summer and passage continued to the end of October; most birds migrated in small flocks of between 10 and 30 individuals and only occasionally did flocks exceed 100, but once over 200 (Williams *et al.* 1992). Further south, in Shandong province Lefevre (1962) documented a flock of 500 near Weihsen on 1 October 1925.

Southeast Asian records

Smythies (1986) recorded the bird as a migrant through Myanmar (Burma) in flocks of up to 100 individuals, often soaring at an immense height 'and looking like insects in the sky', so it is reasonable to assume that it is most probably similarly numerous, though largely unnoticed and unrecorded, in Yunnan and elsewhere in central China at certain times of the year. Passage dates given by Smythies were November and April with occasional records in January and February. In Thailand it has been regarded as a rare vagrant with records in April and November, mostly of single birds or small flocks but in Chiang Mai province there were flocks of 30+ and 40+ in early November

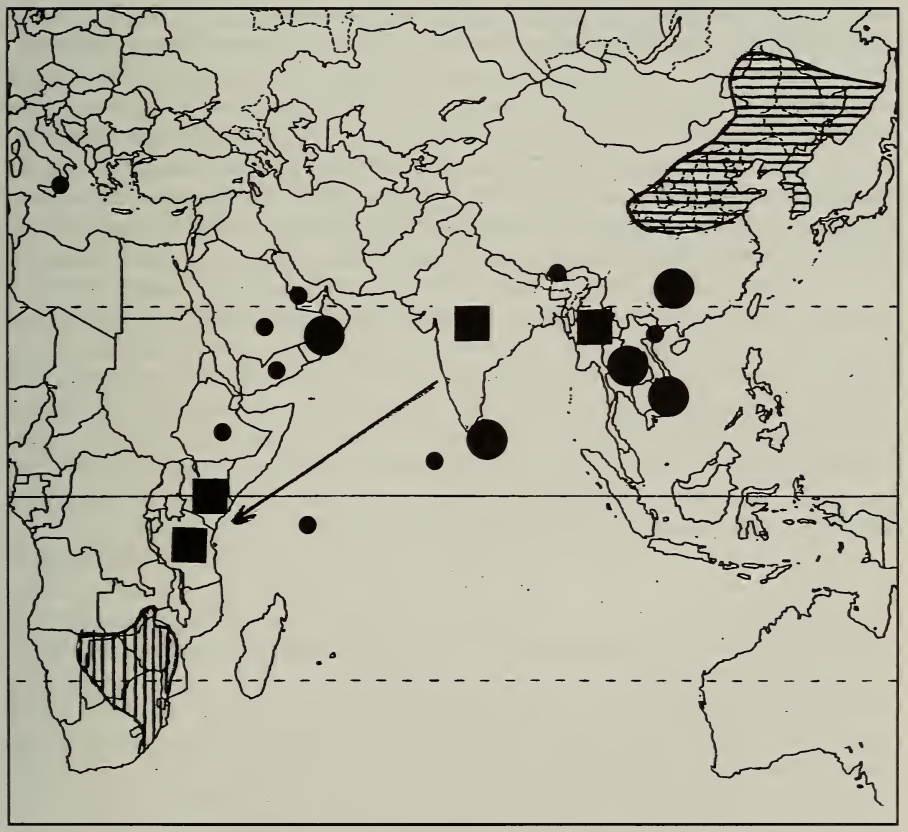

Figure 1. Breeding (horizontal hatching) and wintering (vertical) distribution of Amur Falcon *Falco amurensis*, together with areas of occurrence on passage and probable route of most direct crossing of the western Indian Ocean. • less than 10 records; ● less than 100 individuals annually; ■ regular occurrences of over 100 individuals.

2000 and 40-50 Amur Falcons over Doi Ang Khang on 21 April 2001 (P. Round and P Benstead pers. comm.) and it may be that it has simply been overlooked as a migrant through the north of the country. In Laos there is a single record of one at Houei Nhang forest reserve, Vientiane, October 1992, and in Vietnam, apart from a single bird in November 1999 near Cuc Phuong NP (W. Duckworth pers. comm), the only other records concern a large movement of at least 250 birds on several days near XaPa in November 1997 (F. Lambert pers. comm.); the frequency or exceptionality of such records in such a vast under-watched area can only be guessed.

Indian subcontinent records

Throughout the Indian subcontinent it is considered a widespread but uncommon or rare autumn passage migrant with a few winter and spring records (Grimmett *et al.* 1998). Ali & Ripley (1983) quote Baker (1894-1901) who considered it a casual breeding bird in N. Cachar, Assam and one pair may have bred in Bhutan in 1999 and 2000 (B. Fletcher pers. comm.). In Arunachal Pradesh, NE India, Amur Falcon was not recorded until 1992 when 'large numbers' were observed in the last week of October (Singh 1994); in Corbett NP, northern Uttar Pradesh, it is an occasional passage migrant in the winter months; there is however, an undated record of between 150 - 200 at Dhikala (T. Inskipp pers. comm.). In Bengal the only known records refer to three individuals at 2,800 m along the Sandakphu trek in November 1983 (J. Hornbuckle pers. comm.). Prior to the breeding records above it had only been recorded in Bhutan in 1988 and 1991, with a flock of 14 in late October 1991 (Inskipp & Inskipp 1993). In Bangladesh it is regular in small numbers between October (earliest 22) and December through the central and northern areas and coastal areas around Chittagong. In Nepal it is generally regarded as an uncommon passage migrant in October and November, though in several autumns in the mid-1980s a sizeable flock roosted regularly near Pokhara; there are also records of small numbers in May and individuals in January, June and July (Inskipp & Inskipp 1991). Highest numbers recorded in autumn have been up to 220 at the Pokhara roost in October 1986 and a flock of 328 south of Kathmandhu in November 1985 (Martins 1986).

Most records in India away from the NE are widely dispersed along the coast of the peninsula from the Rann of Kutch east to the Eastern Ghats; details of these records are somewhat patchy but Moreau (1972) reported it as a straggler at Bombay (19°N) and Ali & Ripley (1968) quote the following information from Butler (1881) 'a huge flock numbering some thousands passing Belgaum' (15°54'N, 74°36'E) and E. H. Aitken saw 'large numbers' in the same area in November (year not given). More recently there are records of small numbers, usually of less than 10 together, from Goa in November 1998 (van der Wielen pers. comm.) and in November 1999 (P. Milford, Y. Princen pers. comm.). In Gujarat one was present at the Gur Wildlife sanctuary in February 1984, and more intriguingly eight together near Madhaspur in January 1989; could these birds still have been on passage to Africa?

It has also been recorded in Sri Lanka in December 1872, March 1932 (Phillips 1978) and December 1998 (Robson 2000). Davidson (1898), referring to North Kanara,

Karnataka, noted that it 'appears in some years in immense scattered flocks in November and December. All birds seen have been along the coast and the years 1891 and 1895 were years of great abundance.' On this basis Ali & Ripley (1968) concluded that these records - which do not appear to have been repeated in more recent times - 'suggest that the bulk of the migration between NE India and E Africa - at least in autumn - takes place across the Indian Ocean from somewhere in this area in a continuing NE-SW trend.' Moreau (1972) further refined the area of departure to be concentrated mainly between 14°N and 16°N.

Outside the Indian Peninsula there are even fewer records. Ali & Ripley (1968) referred to an observation of many falcons in northern Afghanistan on 24 April (no date given but was most probably 1937), which they presumed were *amurensis*. However, these were subsequently re-identified by Meinertzhagen (1938) as Red-footed Falcons *F. vespertinus*, but the basis for changing the identification was not given. Surprisingly, and by way of contrast, there are no records from Pakistan (Roberts 1991).

Indian Ocean records

Perhaps not surprisingly, records from the few islands in the western Indian Ocean are as sparse as elsewhere along the route from NE Asia to southern Africa. Virtually the only records that exist are from the Seychelles and Maldives; on the latter islands it is a winter visitor in small numbers from November to March (Ash & Shafeeg 1994). In the Seychelles, including the Amirantes, the Seychelles Bird Records Committee have collected seven records involving up to eleven birds (mostly first winter) in the period late-November to early-March. These include up to four different birds during a ten-day period in December 2000 on Fregate and at least three records of birds remaining in the same territory for up to 3 months (Skerrett *et al.* 2001, A. Skerrett pers. comm.). By contrast, it has not been recorded on the Lakshadweep Islands which are further north and closer to the mainland of southern India (Kurup & Zacharias 1994) and there are no records from any of the islands closer to Africa - Comoros, Mauritius, Reunion and Madagascar (Brown *et al.* 1982, Sargeant 1992, Morris & Hawkins 1998).

Middle east/Arabian records

West of the Indian subcontinent it is regarded as either unknown (Pakistan) or a rare vagrant to the United Arab Emirates (two records July 1995 and March 2000, C Richardson pers. comm.). In Oman it is an irregular and uncommon spring migrant from mid-March to late-May and a rare autumn migrant from mid-October to late-December, and one record in winter. Most records are single birds or small flocks in spring with a maximum of 26 together in the Salalah area on 24 April 1992 (Eriksen & Sargeant 2000); in the same year a total of 201 birds were recorded between 23 April and 18 May (Ash & Nikolaus unpublished). In north Oman it is much less frequent with only three records: one collected at Sur 25 November 1901, male and female 16 April, and female 14 May 1997, both at Al Ansab Lagoons' near Muscat. These

observations suggest regular spring and autumn passage through Oman, with higher numbers in spring than in autumn. The winter record was a juvenile at Salalah 23 December 1983 to 24 January 1984 (Eriksen & Sargeant 2000). The spring migration route of birds through southern Arabia, almost entirely restricted to the Dhofar coast, suggests that they have crossed directly from the Horn of Africa and from here they cross to Asia at some unknown route which avoids north Oman, Masirah Island, Muscat and UAE; they may possibly cross the remote areas around Ras Madrakah or Ras al Hadd where few observations have been carried out during migration. Elsewhere in Arabia there has been a recent (November 1984) record of a single bird in south Yemen (Ash 1989). It appears to be a very rare vagrant to Saudi Arabia; included in the few records that exist are two birds taken by Meinertzhagen out of a flock of a hundred near Mecca in April (undated) and later verified by B.P. Hall. Whilst this could have been part of the normal migration pattern, Moreau (1972) commented that this could have been due to the birds following a swarm of locusts.

Western Palearctic records

The first record of this extreme vagrant to the Western Palearctic was in April 1995 at the Straits of Messina, southern Italy, a well-watched raptor migration point (Corso & Dennis 1998). This has subsequently been followed by 5 others, all at the same location, in May 1998 and May 1999. The similarity between the dates of occurrence with that in the passage records through the Middle East is particularly noteworthy.

Arrival in Africa

First arrivals in southern Africa are from late November (Brown *et al.* 1982) but the southernmost parts of the wintering range are not occupied until early December. In Malawi, the centre of the wintering range, Amur Falcons are present from December to March but not until January and February are peak numbers of birds present. There are, however, extremely few records of birds arriving at coastal locations anywhere in East Africa. Britton (1980) gave only three coastal records from East Africa and of those only one - two at Pemba 23 November 1937 (Pakenham 1979) - is within the arrival period. The other two are Mikindani, Tanzania, in March and Kilifi, Kenya, in April.

In Somalia, one of the least explored countries in Africa, Ash & Miskell (1998) published details of two November records, one of which, interestingly (dating back to 1937), is of two birds 160 km offshore. Ash & Miskell also reported two birds (both presumably collected), an adult male and immature, at the coastal location of Obbia in January 1931. More importantly it is from Somalia that most evidence comes for an overland return route, with April records, from three years in the period 1979 to 1983, of flocks of up to 250 together in the south of the country. There are no records from either Djibouti (Welch 1984, 1985) or Socotra (Kirwan 1998).

In SE Kenya, southern and eastern Tanzania, Britton (1980) recorded the bird as a passage migrant in small numbers in November and December, and again in March

and April. Britton gave few supporting details but included a record of over 1,000 which flew SSW over Dodoma (Tanzania) on 13 January 1956 (a late date for birds still en route to their wintering areas unless they had 'stopped-off' along the way. In addition, Britton (1980) reported that 'thousands occur in Ruaha NP' central Tanzania, though this record carries no date and it could be assumed to refer to passage times, since he goes on to mention only two other January records (from central Kenya and SW Tanzania), both without any numbers of birds involved. More recently Zimmerman *et al.* (1996) added that 'large flocks pass through the Tsavo region on southward migration' and that there are only a few records from northern Tanzania. An indication of the possible numbers of birds involved comes from a roost count of between 4,000 and 5,000 birds in Malawi in February 1951 (Benson 1951). In spring, Ash & Miskell (1989) recorded passage through Somalia as occurring mostly inland, suggesting that onward movement may also be overland. In support of this the very few coastal records in Tanzania and Kenya contrast with the many inland records from both countries, and also lends support for the theory of overland migration.

New records from Ethiopia

In November 1989 PC recorded at least three individuals between Dodola and Goba in the southeastern highlands of Ethiopia; these are the first substantiated records for the country (Ash pers. comm.). The species was looked for in the same area in subsequent years but it was not recorded again until November 1997 when DH saw 3 males and 4 females between Dodola and Adaba. This is an extensive plateau in the southeastern highlands extending *c.* 600 km north to south and *c.* 200 km at its widest point; the main habitat is short grassland, similar to that in the main wintering area further south. The plateau is well-known for its abundance of birds of prey since it is a particularly good area for Common Kestrels *F. tinnunculus*, Lanner Falcons *F. biarmicus*, Pallid *Circus macrourus* and Montagu's Harriers *C. pygargus*. The only subsequent record of Amur Falcon from Ethiopia was a first-winter bird at Nekemte, Wolega Province on 26 November 1998 (I. Robertson & M. Mellor pers. comm.).

Discussion

The paucity of records from the vast area between the Himalayas and southern Africa suggests that these birds either move unseen, or along a broad front from Asia to Africa which involves overland, coastal and transoceanic flight. On the evidence available it could be assumed that the birds cross the western Indian Ocean to make landfall along the coast of southern Kenya or northern Tanzania. The few records from islands in the Indian Ocean, together with a lack of any similar concentrations of birds further south along the seaboard of East Africa, tends to support this. It appears that the bird is capable of moving large distances overland via central and western India or by a shorter sea crossing in an arc route to the horn of Africa completely undetected.

Since most of the passage movements of birds across India and within Africa, i.e. from Tanzania to the main wintering area south of Malawi, are similarly unnoticed, it is highly likely that most of these are above observable limits, similar to the birds on passage through northern Burma reported by Smythies (1986). Within the wintering area the bird becomes extremely conspicuous, hunting for grasshoppers, locusts and termites in large and loosely social groups of up to several hundred over large areas of open country, particularly grasslands with scattered trees.

The evidence for a longer sea-crossing of the western Indian Ocean, from a departure point somewhere in southern India to Tanzania or northern Mozambique would be, on a direct crossing, in the region of 4,800 km and clearly be of several days duration. Whilst several other falcons move relatively long-distances, notably Eleonora's Falcon *F. eleonorae* and Hobby *F. subbuteo*, regular movements across such an expanse of open sea are unique for a raptor. The weather over the Indian Ocean is generally favourable in October and November for transoceanic crossing. The SW monsoon moves southward from its most northerly position over Kutch in mid-September to around 12°N at the end of October, this is overlain by northeasterly winds (the inter-tropical convergence zone - ITCZ) which become progressively dominant so that by December they prevail at all levels over the whole of the Arabian Sea. During the monsoon airflow rises rapidly from ground level to reach the overlying north-easterlies which by September are *c.* 3 km altitude and this wind then extends all the way west to the horn of Africa (N. Elkins, pers. comm.).

This sudden rise of air could easily facilitate the movement of a large number of migrant birds to altitudes above observable limits and set them on a heading between west and southwest. It would appear that the west coast of India north of about 13°N, particularly where the SW monsoon strikes the Western Ghats, is the most likely departure area; south of this area the airflow is more likely to carry them south into the Indian Ocean. Thus it would not be difficult for a migrant on a flight from India to Africa with a strong following wind at *c.* 3,000 m to make such a crossing. In support of this are the large number of November records in southern Kenya and NE Tanzania that suggest an arrival point of birds having made a direct crossing.

Maintaining a high-level, long-distance flight across large stretches of open water is, in all probability, extremely energy consuming and a journey which is unlikely to be completed (certainly every year by the entire population) without occasional occurrences on any available landfall along the route. During the SW monsoon storms are a frequent characteristic of the climate and are generally the reason for regular occurrences of similar long-distance transoceanic migrants such as Pacific Golden Plover *Pluvialis fulva* and Terek Sandpiper *Xenus cinereus* on Seychelles and Mauritius. It would therefore not be surprising for a similar sized long-distance migrant to make at least occasional (or exceptional) appearances under similar circumstances.

Whilst part of the population crossing the western Indian Ocean may undertake a direct high-level flight to the wintering area, it also seems equally likely that another

part of the population undertakes a shorter, i.e. more northerly, sea-crossing. This is most likely on a heading between west and northwest from a departure point along the western coast of India with part of this population moving at height overland, borne aloft by the rapidly rising air currents ahead of the southwest monsoon. From the little that is known of the small number of records from Somalia, together with the growing number of records elsewhere in NE Africa and Arabia, these suggest that some birds make a shorter sea and/or partly overland crossing. The numbers of birds seen in Oman, particularly in spring, certainly suggest that a proportion of the birds return to the breeding area via a shorter sea crossing. Further work involving collation of detailed records and, in particular, satellite tracking of tagged individuals will clearly reveal more about the movements (including flight times and energy costs) and distances covered by these birds.

Although the main wintering area lies in south-eastern Africa, as described in the introduction, small numbers are occasionally recorded wintering in India, Sri Lanka, the Maldives and Seychelles, locations that are mainly along the postulated route followed by birds making the direct crossing of the western Indian Ocean.

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